

Appl. No. 10/673,388
Examiner: Lavarias, Arnel, Art Unit 2872
In response to the Office Action dated September 18, 2007

Date: January 18, 2008
Attorney Docket No. 10119731

REMARKS

Responsive to the Office Action mailed on September 18, 2007 in the above-referenced application, Applicant respectfully requests amendment of the above-identified application in the manner identified above and that the patent be granted in view of the arguments presented. No new matter has been added by this amendment.

Present Status of Application

Claim 4 is objected to under 37 CFR 1.75(c) as being of improper form for failing to further limit the subject matter of a previous claim. Claim 5 is rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. Claims 1-6 and 10-12 are rejected under 35 U.S.C. 103(a) as being obvious over Fan (US 6,807,342) in view of various combinations of Tehrani (US 5,430,574), Pan (US 5,359,683), Domash (US 2003/0072009), and/or Huang (US 6,263,128).

In this paper, claim 4 is amended to overcome the objection. Claim 5 is amended to overcome the rejection under 35 USC 112, first paragraph. New claim 13 is added. Support for new claim 13 can be found, for example, in Figs. 1-3 illustrating that curved lens 31 is apart from collimator 10. Thus, on entry of this amendment, claims 1-6 and 10-13 remain in the application.

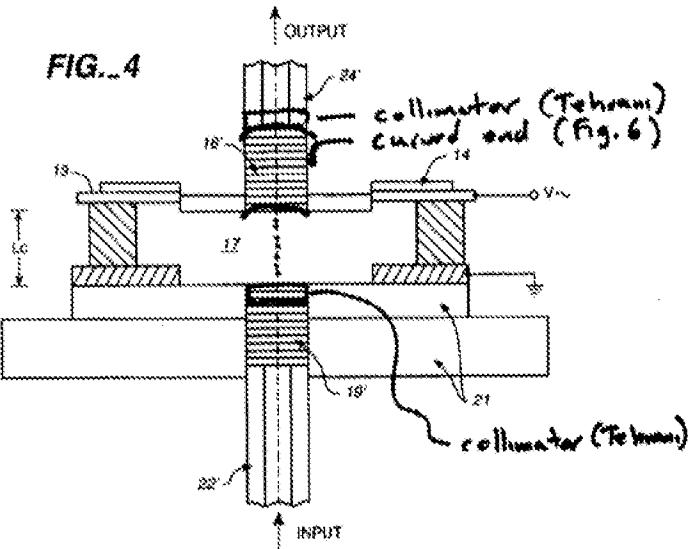
Reconsideration of this application is respectfully requested in light of the amendments and the remarks contained below.

Substance of Interview

An telephonic interview was conducted on November 26, 2007 between the Examiner and the undersigned. Figs. 2, 4 and 6 of Fan were discussed in conjunction with Tehrani. Based on the arguments set forth in the Office action dated September 18, 2007, and the interview with the Examiner, it is Applicant's understanding that that the rejection of claim 1 is based on the following combination of Fan with Tehrani:

1. The concave end 25 (Fig. 6 of Fan) of optical fiber 24' results in a concave shaped interference filter 18' (Fig. 4 of Fan), which is the alleged reflector comprising a curved lens of claim 1.
2. A first collimator as taught by Tehrani is disposed between optical fiber 24' and interference filter 18' as the alleged first collimator of claim 1, and a second collimator as taught by Tehrani is disposed at the exposed end of interference filter 19' as the alleged second collimator of claim 1. In this manner, the alleged reflector is interposed between the alleged first and second collimators, as required by claim 1.
3. A resonance cavity is defined between the alleged reflector and alleged second collimator.

As best understood by Applicant, this combination is illustrated below with a marked up version of Fig. 4 of Fan:



In response, Applicant first submits that there is no motivation to dispose a collimator as taught by Tehrani between the curved interference filter 18' and fiber 24'. According to the teaching of Fan's Fig. 6 and col. 3, lines 10-13, interference filter 18' is curved since it consists of multi-

layers coated on a curved end of fiber 24'. Therefore, the curved interference filter 18' must directly contact the curved end of fiber 24'.

Furthermore, a fiber collimator, as known in the art and evidenced by USPs 7,016,574, 6,785,441, 6,714,703, 6,694,077, 6,643,428, 6,901,186, 6,980,717, 6,934,087, and 6,804,435, is an apparatus including at least a fiber and parts surrounding the end of the fiber. Those parts are for the purpose of making a parallel-incoming light focused onto the fiber or turning the light spreading from the fiber (as a point light source) into a parallel-outgoing light. The collimator in Tehrani is not an exception. Combining the teaching of Tehrani and Fan, a collimator would only be disposed at a position outside the coating at the end of a fiber. It would not be inserted between the coating and the fiber. There is no reason or motivation to add a collimator as taught by Tehrani in between the optical fiber 24' and curved interference filter 18' of Fan.

Second, even if a collimator of Tehrani were disposed in between fiber 24' and curved interference filter 18' of Fan, the resulting combination still fails to teach a resonance cavity defined by a curved lens and another collimator, and a resonance frequency determined by this resonance cavity, as recited in claim 1. In particular, the resonance cavity taught by Fan is defined by two interference filters 18' and 19'. No matter where a collimator is disposed, the resonance cavity taught by Fan must remain the same (i.e. defined by interference filters 18' and 19') since the structure of the resonance cavity is the key technical feature of Fan's Fabry-Perot resonator as detailed in Fig. 7 and the relevant description of Fan.

Thus, even if a first collimator of Tehrani were added in between fiber 24' and curved interference filter 18' of Fan and a second collimator were added between interference filters 18' and 19', the resonance cavity determining the resonance frequency would be defined by two interference filters 18' and 19', rather than by interference filter 18' and the second collimator.

Rejections Under 35 U.S.C. 103(a)

Claims 1-6 and 10-12 are rejected under 35 U.S.C. 103(a) as being obvious over Fan in view of various combinations of Tehrani, Pan, Domash, and/or Huang. Applicant respectfully traverses the rejections for the reasons as follow.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Claim 1 recites a tunable filter with a wide free spectral range, comprising:

- a first collimator;
 - a second collimator with one end opposed to the first collimator; and
 - a reflector interposed between the first collimator and the second collimator, the reflector comprising a curved lens;
- wherein ***the curved lens and the second collimator define a resonance cavity to determine a resonance frequency.***

Applicant submits that whether taken alone or in combination, Fan, Tehrani, Pan, Domash, and/or Huang fail to teach or suggest a resonance cavity that determines a resonance frequency and is defined by a curved lens and a second collimator.

In particular, it is noted that in the Office actions dated May 8, 2006, Dec. 1, 2006 and Sep. 18, 2007, the Examiner repeatedly relies on the disclosure in Figs. 2 and 4 of Fan to teach the resonant cavity of claim 1. However, in Fan, ***a pair of opposed interference filters define the resonance cavity.***

In this regard, Applicant first notes that Figs. 2 and 4 of Fan illustrate two separate embodiments. "In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the

proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). To the extent that Fan is relied upon to teach a certain arrangement, the arrangement must be found entirely in a single of the embodiments or motivation must be shown to modify one of the two embodiments to obtain the arrangement. The Office action fails to show the required motivation.

Furthermore, with respect to Fig. 2, it is evident that interference filters 18 and 19 are respectively separate from and between optical fibers 24 and 22 such that resonance cavity 17 is defined by interference filters 18 and 19 but not by a curved lens and a optical fiber (or a collimator disposed at the end thereof) as stated in the Office action.

On the other hand, with respect to Figs. 4-6, in which the interference filters are an integrated part of an optical fiber (i.e., coated at the end thereof), it is also evident that resonance cavity 17 is defined by the two interference filters 18' and 19', but not by a curved lens and an optical fiber (or a collimator disposed at the end thereof) as stated in the Office action.

In particular, claim 1 recites that ***the curved lens and the second collimator define a resonance cavity to determine a resonance frequency.*** To the contrary, no matter where a collimator is disposed in the apparatus of Fan, the resonance cavity is still defined by the two interference filters 18' and 19', and it is this cavity that determines the resonance frequency, since the structure of the resonance cavity is the key technical feature of Fan's Fabry-Perot resonator as detailed in Fig. 7 and the relevant description of Fan.

Thus, even if the teaching of Fan were modified to include a collimator as allegedly taught by Tehrani at the ends of optical fibers 22 and 24 or 22' and 24', the combination would fail to teach or suggest a first collimator, a second collimator, and a reflector interposed between the first collimator and the second collimator, the reflector comprising a curved lens, wherein the curved lens and the second collimator define a resonance cavity to determine a resonance frequency, as recited in claim 1.

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It is therefore Applicant's belief that a prima facie case of obviousness cannot be established in connection with claim 1. Furthermore, as it is Applicant's belief that a prima facie case of obviousness is not established for claim 1, the Examiner's arguments in regard to the dependent claims are considered moot and are not addressed here. Allowance of claims 2-6 and 10-12 is respectfully requested.

New Claim 13

Newly added claim 13 is believed to be allowable by virtue of its dependency on allowable independent claim 1. In addition, for alternate and independent reasons, it is believed to be allowable insofar as Fan's multilayer interference filter 18' in Figs. 4 and 6 is formed of coatings on optical fiber 24' and therefore is not "apart" from optical fiber 24', while claim 13 recites that the curved lens is "apart" from the first collimator.

Conclusion

The Applicant believes that the application is now in condition for allowance and respectfully requests so. The Commissioner is authorized to charge any additional fees that may be required or credit overpayment to Deposit Account No. **502447**.

Respectfully submitted,

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